

SALIENT CHARACTERISTICS

SIGNAL GENERATOR (12 to 18 GHz)

GEAMJ-A

- 1.0 GENERAL This procurement requires a solid state, microwave signal generator capable of generating signals over the frequency range of 12 to 18 GHz.
- 2.0 CLASSIFICATION The equipment shall meet the requirements of MIL-T-28800(), Type III, Class 5, Style E, Color R for Navy shipboard, submarine, and shore applications with the following modifications and exceptions:
- a. The Electromagnetic Interference requirements of MIL-T-28800() are limited to CE01, CE03, CS01, CS02 (0.05 to 100 MHz), CS06, RE01 (relaxed 20 dB; back panel search excluded), RE02 (14 kHz to 10 GHz), and RS03.
 - b. The warm-up time is extended to one hour.
- 3.0 OPERATIONAL REQUIREMENTS The equipment shall be capable of generating signals within the parameters and accuracies specified herein.
- 3.1 Frequency Characteristics
- 3.1.1 Range: At least 12 to 18 GHz
 - 3.1.2 Resolution: At least 10 MHz
 - 3.1.3 Accuracy: At least $\pm 1\%$ of reading at maximum power [Temp = $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$]
 - 3.1.4 Stability at $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$ (equal to or better than limits specified below)
 - 3.1.4.1 Short Term: Frequency drift less than $\pm 1\text{pp}10^4$ for 5 minutes
 - 3.1.4.2 Long Term: Frequency drift less than $\pm 6.7\text{pp}10^4$ for 1 hour
 - 3.1.5 Temperature Drift: Less than 0.4% total change over 0 to 50°C temperature range
 - 3.1.6 Spectral Purity
 - 3.1.6.1 Harmonic Level: At least -20 dB
 - 3.1.6.2 Spurious: At least -55 dBc
 - 3.1.6.3 Residual FM: Less than 15 kHz peak [50 Hz to 15 kHz BW]

3.2 Output Characteristics

3.2.2 Level Control: Continuous over at least a 25 dB range

3.2.3 Impedance: 50 ohms nominal

3.2.4 Connector: Type N female

3.3 Modulation Characteristics

3.3.1 Amplitude Modulation (AM)

3.3.1.1 Internal (square wave)

3.3.1.1.1 Rate: Variable, at least 20 Hz to 5 kHz

3.3.1.1.2 ON/OFF Ratio: Greater than 25 dB

3.3.1.1.3 Rise/Fall Time: 5 μ s maximum

3.3.1.2 External

3.3.1.2.1 Rate: At least 20 Hz to 50 kHz

3.3.1.2.2 Input Level: 0 to ± 10 V

3.3.1.2.3 ON/OFF Ratio: Greater than 25 dB

3.3.1.2.4 Rise/Fall Time: 5 μ s maximum

3.3.2 Frequency Modulation (FM)

3.3.2.1 Internal (sawtooth)

3.3.2.1.1 Deviation: ± 5 MHz

3.3.2.1.2 Rate: At least 10 Hz to 5 kHz

3.3.2.2 External

3.3.2.2.1 Deviation: ± 5 MHz

3.3.2.2.2 Rate: At least dc to 50 kHz

3.3.2.2.3 Input: Less than ± 5 V for 5 MHz deviation

4.0 GENERAL REQUIREMENTS

4.1 Power: 115/230 Vac $\pm 10\%$ single phase, 50, 60 or 400 Hz, 20 watts maximum

4.2 Dimensions: The total volume of the unit shall not exceed 46,000 cm³ (2800 in³).

4.3 Weight: The overall weight of the unit shall not exceed 4 kg (8.75 lb).

4.4 Calibration Interval: The calibration interval shall be 12 months minimum. The equipment shall be within all accuracy requirements specified herein, with a 72% or greater confidence factor following a calibration interval of 12 months.